City of Mankato Wastewater Treatment Plant
Mankato, Minnesota

Biosolids Management Program Manual

Committed to Excellence in Biosolids Management

Created/Approved: PM/JB
Date Issued: March 1, 2008
Date Last Reviewed: January 26, 2012
Date Last Revised: January 26, 2012

MISSION STATEMENT

The City of Mankato will pursue beneficial biosolids reuse options that protect human health and environmental quality, are cost effective and provide flexibility with respect to end use. Our mission statement:

Committed to Excellence in Biosolids Management

Mark A. Knoff

Mark Knoff, Director of Public Works
City of Mankato

March 20, 2008
Date

Revision No.	Date	Reason for Revisions	Revised by
0		First Issue	Patti Mettler
1		Updated information	Patti Mettler
2	11/16/09	Revised after Pete Machno looked over	Patti Mettler
3	12/13/10	Revised to reflect internal audits	Patti Mettler
4	1/03/11	Revised to reflect auditor comments	Patti Mettler
5	1/24/2011	Revised to reflect auditor comments	Patti Mettler
6	1/26/2012	Revised after internal audits	Patti Mettler

Table of Contents

Definitions Page

Accident- Undesired event related to environmental aspects or occupational health and safety risks giving rise to death, ill health, injury, or damage resulting in lost time or workmen compensation.

Audit- A systematic investigation to identify deficiencies to be corrected or resolved.

Auditor- A competent person(s) conducting an audit.

AWAIR- An acronym for a workplace accident and injury reduction program. It is part of the City of Mankato safety program.

Awareness- A mindful and conscious of the implication of each action or activity.

Awareness Training- Training involving an overview of the purpose, scope, the process and importance of specific operating procedures and work instructions required under the City of Mankato BMP. The training will address the importance of conformance with the environmental/biosolids policy and BMP procedures and requirements, a clear understanding of their roles and responsibilities in achieving conformance, including emergency response and planning, and the awareness of significant environmental impacts of their work activities and the potential consequences of departure from specified operating procedures.

Biosolids- Solid organic matter recovered from a wastewater treatment process and used especially as fertilizer, usually referred to in the plural.

Biosolids Management Activities- A wide range of activities that impact quality of wastewater solids and biosolids, that include pretreatment activities, wastewater treatment processes, solids stabilization processes, conditioning and dewatering processes, transportation, storage, and beneficial use or disposal.

Biosolids Management Program- Also known as BMP. Formerly known as EMS.

Code of Good Practice- A broad framework of goals and commitments to guide the production, management, transportation, storage, and use or disposal of biosolids.

Contractor- A company that provides labor, services, materials and other resources under contract to perform specific activities, install, repair, or otherwise service operational equipment for the City of Mankato WWTP.

Critical Control Points- An activity that is considered critical to ensuring a quality biosolids product or clean wastewater as required under the City of Mankato BMP.

Corrective Actions- Specific actions and steps taken to correct any BMP noncompliance with legal and other requirements or nonconformance with processes, programs or procedures, to mitigate any resultant impacts to the environment, health and safety or to public perception.

Documents- Information and its supporting medium (paper, magnetic, electronic, computer dist, photograph, or combination thereof). For the purpose of the City of Mankato, it is the various documents that collectively comprise management system documentation, including the BMP policy, program, procedures, processes operating instructions, and other supporting documents required by the BMP and applicable laws and regulations.

Emergency- Any situation that may go offsite, or require emergency personnel intervention to control.

Emergency Preparedness- An emergency planning process to ensure that emergency situations affecting the Mankato Wastewater Treatment Plant have been identified, response plans and procedures have been developed, and training emergency response personnel and equipment are ready and available for use.

Emergency Response- Specific emergency plans and activities that are initiated to contain an emergency situation and bring it under control in order to minimize environmental and occupational health and safety impacts.

Emergency Response Planning- The activity of anticipating emergencies and planning how to respond to such events, including developing Standard Operating Procedures (SOPs), response training, and establishment of requisite communication channels.

Environment- The surrounding in which the City of Mankato WWTP operates, including air, water, land, natural resources, flora, fauna, humans, and other interrelations.

Environmental- Where referenced throughout them manual, includes all City of Mankato WWTP activities: the collection and treatment of wastewater and the control and return of treated water and biosolids to the environment.

Goals - Environmental and occupational health and safety performance improvement goals that are consistent with the City of Mankato WWTP policy to ensure activities comply with applicable laws and regulations meet quality and public acceptance requirements and prevent other unregulated adverse environmental, health and safety impacts by effectively managing all environmental aspects, health and safety hazards/risks, and critical control points. Goals may include, but are not limited to, compliance with specific regulatory requirements, improving quality, improving public

acceptance, and reducing or eliminating direct or indirect negative environmental impacts.

Interested Parties- Individuals or organizations, public or private, affected by the City of Mankato WWTP activities, those expressing interest in WWTP activities, or those the WWTP believes would be interested in its activities.

Internal Audit- A systematic internal investigation process for objectively evaluating the City of Mankato WWTP's conformance to the requirements of the City of Mankato BMP program and identifying deficiencies to be corrected or resolved.

Legal Requirements- The environmental and occupational health and safety federal, state, and local laws and regulations that are applicable to the City of Mankato WWTP activities.

Management Review- The process of conducting a periodic evaluation of the City of Mankato BMP and developing any necessary changes to the BMP to continuously improve its effectiveness.

Measurement- The systematic method of estimating, testing, or otherwise evaluating key parameters and characteristics of the WWTP activities to determine conformance with a specific standard or other performance requirement.

Monitoring- The systematic process of watching, checking, observing, inspecting, keeping track of, regulating, or otherwise controlling key parameters and characteristics of the City's activities to determine compliance with a specific standard, regulatory or other performance requirement, or to measure progress toward goals and objectives.

NBP- An acronym for the National Biosolids Partnership, which is a not-for-profit alliance between the Water Environment Federation (WEF), the National Association of Clean Water Agencies (NACWA), and the US Environmental Protection Agency (EPA) whose purpose is to promote safe and environmentally sound biosolids management.

National Manual of Good Practice- A detailed set of guidance on the identification of critical control points and the selection of appropriate management practices published by the National Biosolids Partnership.

Noncompliance- A deviation from federal, state, and local laws, regulations, and other compliance requirements applicable to the City of Mankato WWTP activities.

Nonconformance- A deviation from the established program and management system requirements that has the potential to create a noncompliance situation, significant environmental impact, occupational health and safety hazard or risk, or public perception issue.

Objective- A detailed performance improvement requirement that arises from goals, and that need to be set and met in order to achieve the overall goal.

Operational Controls- The ordinances, regulations, standard operating procedures, practices, technology, instrumentation and process controls, monitoring and other criteria developed, implemented and maintained by the City of Mankato WWTP to ensure requirements; and achievement of goals.

Other Requirements- Other non-binding practices, rules, codes, and environmental requirements to which the City of Mankato WWTP adheres to.

Performance- Measurable results of the WWTP BMP as related to the City of Mankato WWTP's control of environmental impacts, health and safety risks, and biosolids activities based on its policy and goals.

Public Participation- The direct involvement of the general public in the development and implementation of the City of Mankato WWTP BMP through organizations such as local environmental action groups, city council, state agencies, local farmers, local news media, and other similar organizations.

Records- Various records or reports of activities required by the managements system and applicable laws and regulations, including, but not limited to records or reports of equipment calibration, monitoring, measurement, laboratory testing, inspections, operating logs, emergency response, incidents, outside party inquiries, public participation meetings, audits, corrective and preventive actions, management reviews, and periodic performance reports. Records describe the results of specific activities for a prescribed event, activity and/or period of time.

Regulations- The set of rules and legal requirements that apply to the operations of the City of Mankato WWTP, as developed by the US EPA, MPCA, Minnesota Department of Health, and local ordinances.

Responsibilities- The specific tasks that an individual performs in either a lead or supporting role that accomplishes and/or supports goals and objectives.

SMART Criteria- The criteria that define and evaluate the suitability of a practical goal or objective. A goal or objective is **s**pecific, **m**easurable, **a**chievable, **r**elevant, and **t**ime-bound.

Standard Operating Procedure (SOP)- The standard work instruction and practices for employees describing the "how to" steps in managing the aspects, risks, and critical control points of a specific management activity affecting the WWTP activities, compliance with legal and other requirements, and health and safety risks.

Third Party Verification Audit- A systematic, structured audit of the City of Mankato WWTP BMP; performed by a qualified independent third party auditor using a standardized protocol for verification.

Training- Teaching to make fit, qualified, or proficient; preparation for a test of skill or knowledge; instruction in disciplines and techniques.

WWTP- The City of Mankato Wastewater Treatment Plant

Element 1: Mankato Wastewater Treatment BMP

Created/Approved: PM/JB
Date Issued: March 1, 2008
Date Last Reviewed: May 5, 2011
Date Last Revised: October 6, 2011

General

The City of Mankato is located in south central Minnesota at the confluence of the Minnesota and Blue Earth Rivers. While the city of Mankato has a population of about 36,500 people the Mankato Wastewater Treatment Plant (WWTP) has a service population of approximately 50,000 people from 5 cities and includes 2 Sanitary Districts.

The original primary plant was built in the mid 1950's with major expansions occurring in 1974 for construction of a secondary treatment system and a capacity expansion in 2000 in addition to phosphorus and ammonia removal. The design capacity of the plant is 9.38 MGD, a maximum flow of 22.0 MGD and a hydraulic capacity of 44.0 MGD. Treatment currently consists of primary settling and chemical phosphorus removal, extended aeration to include ammonia removal, clarification and disinfection. The solids train includes DAF, anaerobic digestion, belt filter press, storage and land application.

A latest construction project was completed in June 2006, to utilize up to 6.2 MGD of our effluent water for cooling at a natural gas-fired turbine electrical generating plant currently under construction. In exchange for our effluent water the power company has built a 12 MGD phosphorus removal system on the effluent end, filtration and chlorination to meet California Title 22 Standards for Reuse Water to be owned and

located at the Mankato WWTP. In addition, effluent water is being used in the sprinkler system of a nearby city park. A waste receiving station has been constructed in 2011 at the wastewater plant. It will be used for potable toilet waste, leachate, and vac-truck waste. The solids will be separated and brought to the landfill. The liquid portion will become part of our influent stream.

The Mankato WWTP staff consists of twelve full-time employees. There are five operators, three maintenance, two laboratory, a plant foreman, and a wastewater superintendent. The plant is staffed 8 hours per day 7 days per week. A SCADA system relays alarms to the Mankato Water Treatment Plant which is staffed 24 hours per day. One of the WWTP operators is on-call at all times. The laboratory normally has 2 interns from the local university to assist with sampling as well as projects such as sources of pollutants for our source reduction program and water quality sampling from internal watersheds to assist with community development planning.

The Mankato WWTP has Delegated Authority over its Pretreatment Program. Currently there are 15 Significant Industrial Users, 7 Categorical Industrial User and approximately 30 Industrial Users. The focus of the Pretreatment Program is to reduce pollutants at the source, to prevent upsets to the wastewater treatment plant, to prevent pass-through, and to improve the quality of the two end products: Clean effluent water to the Minnesota River and quality biosolids for land application.

Three primary anaerobic digesters are heated with waste gas and then transferred to the secondary storage tank. Five days per week the biosolids are withdrawn and dewatered through a Belt Filter Press and stored on site in a covered bunker. After harvest in the fall the City's Street Division hauls the biosolids to nearby farmland. The city has about six farmers with several hundred acres participating in the land application program.

The City of Mankato is interested in participating in the National Biosolids Partnership because we currently have a great biosolids program and the certification and external audit offered by this Partnership will be a reassurance to the citizens of our area that we are going the extra mile and being proactive towards protecting the environment on their behalf. The Biosolids Management Program will ensure that the City of Mankato has thoroughly investigated and planned each aspect of biosolids, generation through land application.

Procedures

1. The BMP manual is expected to change with periodic reviews. Revisions are expected as new information is obtained, changes to existing systems occur and as experience is gained in administering an BMP.
2. Revisions to the BMP manual will be made by the City of Mankato BMP Coordinator on an "as needed" basis.
3. The BMP Coordinator will inform the internal and external BMP Advisory Teams, and upper level management of significant revisions to the BMP manual.

In addition, the most recent version of the BMP manual will be posted on the City of Mankato's internet site.

4. The City of Mankato WWTP will follow legal requirements as listed in Element 4. The BMP Coordinator will oversee the investigation any future other requirements.
5. The BMP Coordinator will provide notification of significant revisions to other interested parties through one or more of the communication tools listed under Element 9.
6. All related BMP documentation can be found in the share file under "NBP".
7. Uncontrolled versions of the related BMP documentation can be found in the WWTP conference room.

Element 2: Biosolids Management Policy

Created/Approved: PM/JB
Date Issued: March 1, 2008
Date Last Reviewed: May 5,2011
Date Last Revised: October 6, 2011

General

The City of Mankato Administators and deputy directors fully support the NBP program. The City of Mankato's City Manager formally adopted the following Biosolids Management Policy on August 8, 2005, after it was brought before and passed by the city council. The policy establishes guiding principles for the City's biosolids management program and the BMP. The policy is consistent with the City's overall framework for continuous improvement, which was developed as part of a strategic planning process and is described in the City's strategic planning document, "Leadership and Consensus, Building a Stronger Community".

Biosolids Management Policy Statement

The City of Mankato will pursue beneficial biosolids reuse options that protect human health and environmental quality, are cost effective, and provide flexibility with respect to end use.

The City will achieve this policy by:

- Following the Code of Good Practice for biosolids developed by the National Biosolids Partnership.
- Maintain a pretreatment program consistent with federal regulations.
- Participating in source reduction programs.
- Periodically evaluating beneficial reuse options that provide potential for increased diversification and/or improved efficiencies.
- Implementing/maintaining a comprehensive computerized recordkeeping and reporting system to track biosolids distribution.
- Commit to maintaining an environmental monitoring system that meets regulatory requirements.
- Funding research on problematic issues related to biosolids management to support beneficial reuse options being utilized and/or considered by the City.
- Providing adequate training opportunities to personnel associated with the biosolids management programs.

Procedures

The BMP Coordinator is responsible for ensuring that the biosolids management policy is communicated to employees, contractors and other interested parties, using one or more of the communication tools listed in Element 9.

Methods used to accomplish this policy include, but are not limited to the following:

- Posting an electronic version of the BMP (which includes the biosolids management policy) on the City's website at www.city.mankato.mn.us.
- Presenting the biosolids management policy statement to City employees at a plant meeting.
- Providing a copy of the biosolids management policy statement to both the BMP internal and external teams during annual goal setting exercises. NBP and BMP is available for discussion at weekly staff meeting and supervisor meetings. During staff meetings training, review of SOP's, and updated policy changes regarding BMP is discussed.

If revisions to the current policy statement are deemed necessary to reflect changing conditions, the BMP coordinator will notify the Wastewater Superintendent of necessary changes.

The Public Works Director and the City Manager will consider and/or approve the changes.

Once approved, the BMP Coordinator will communicate the revised policy as per the used above. The BMP Coordinator will also place the revised policy in the BMP manual.

Element 3: Critical Control Points

Created/Approved: PM/JB
Date Issued: March 1, 2008
Date Last Reviewed: September 27, 2011
Date Last Revised: October 6, 2011

General

Critical control points are those biosolids management activities that are under the Wastewater Treatment Plant's direct control or influence that have the potential to create significant negative environmental impacts if not effectively managed. These include activities that can impact the quality of the plant's biosolids, how biosolids are managed, or how the plant's beneficial reuse programs are viewed by the general public.

Table 1 identifies the Wastewater Treatment Plant's biosolids value chain, the associated critical control points and potential environmental impacts that could result from inadequate control of these points. The critical control points were selected using a two-step process. A draft set of critical control points was prepared by the Wastewater Treatment Plant's BMP Coordinator after carefully reviewing information contained in the National Manual of Good Practice and critical control points identified by select NBP BMP demonstration agencies. The draft set of critical control points was then reviewed

and modified by the Wastewater Treatment Plant's internal BMP team and select City staff.

Table 1 also contains information on operational controls (Element 10), monitoring/measurement activities (Element 13) and actual/potential environmental outcomes associated with each critical control point. Roles and responsibilities for general management of the critical control points are identified in Table 2. Additional information related to roles and responsibilities is provided under Element 7.

Procedures

The following procedure will be used to review and update the selection of critical control points:

1. The Wastewater Treatment Plant's internal BMP team will review information in Table 1 on an annual basis, when there are regulatory changes or whenever major operational changes occur. The annual review will be conducted during the third quarter audit.
2. Revisions (if any) will be documented in writing by the BMP Coordinator, who will then be responsible for ensuring that any necessary changes are made in Table 1 of the BMP manual. At a minimum, documentation will occur through notation in the annual biosolids program report.

3. If revisions to the critical control points are deemed necessary by the team, information related to roles/responsibilities (Element 7), operational controls (Element 10), monitoring/measurement (Element 13) and any other relevant areas of the BMP (including environmental outcomes listed in Table 1) will also be reviewed and modified as appropriate. Documentation will be consistent with the approach in Step #2.

4. The BMP coordinator will notify the NBP and third party auditors if/when there are changes affecting critical control points. Internally, training will also be reviewed and documented as stated in Element 8.

Table 1: Critical Control Points, Operational Controls, SOP's, Monitoring/Measurements and Environmental Outcomes

Biosolids Value Chain	Regulatory	Critical Control Points	Quality	Operational Controls (Documents in italics are controlled documents)	Operational Monitoring & Measurement	Potential Environmental Impacts
Collection and Pretreatment	❖ NPDES Permit #MN0030171 ❖ EPA Local limits and development with appendicies ❖ Mankato City Code and Charter ❖ Industrial Wastewater Permits ❖ EPA CERCLA Site Discharges to POTW's guidance manual	❖ SIU and IU discharges ❖ Atypical wastes discharges	❖ Pollutant reduction	❖ Pretreatment program ❖ Procedures document	Monitoring/Measurement Site inspections, influent metals sampling, IU sampling, atypical waste sampling, collection system sampling, review of self-monitoring data. Relevant reports and/or requirements 1. NPDES permit requirements. 2. Discharge monitoring report requirements. 3. Compliance maintenance annual report requirements.	Control of biosolids quality necessary to ensure compliance with state and federal regulations, which are designed to be protective of human health and environmental quality. Potential for odors needs to be recognized and addressed if problematic.
Preliminary Treatment Solids Processing	❖ NPDES Permit #MN0030171	❖ Screening and grit removal	❖ 85% solids removal	❖ SOP-Solids Processing building ❖ OPS-SQL ❖ Equipment maintenance	Monitoring/Measurement Level sensor on screen system, grit removed (lbs/day) in influent and primary sludge. Relevant information in operations monthly process report database OPS-SQL Relevant screens in PCS Grit screen Equipment R&M reports in Hansen program	Controls plastics and other unwanted materials in digesters and biosolids-both an aesthetic and vector attraction concern. Potential for odors needs to be recognized and addressed if problematic.
Stabilization	NPDES Permit #MN0030171	Anaerobic Digestion	Pathogen reduction 2%solids	❖ SOP-Digesters ❖ OPS-SQL ❖ Heat exchangers ❖ Loading (WAS & Primary sludge thickening) ❖ Digester mixing ❖ Equipment maintenance	Monitoring/Measurement Primary and WAS loading, digester temp, detention time, VA/alkalinity, VS, TS (to and from digester), VSR, fecal coliform levels in biosolids Relevant reports in operations monthly process report database Digester volatile solids reduction Digester operation Gas production usage Relevant screens in PCS Digester screen Digester gas Digester heating Equipment R&M reports in Hansen program	Biosolids that are not adequately stabilized can result in odors, make the material attractive to vectors (e.g. flies) and can result in inadequate destruction of potentially pathogenic organisms. Potential for odors needs to be recognized and addressed if problematic.

Biosolids Value Chain	Regulatory	Critical Control Points	Quality	Operational Controls (Documents in italics are controlled documents)	Monitoring & Measurements	Potential Environmental Impacts
Post Stabilization Thickening	❖ NPDES Permit #MN0030171	Belt Filter Press	❖ 18%-21%solida	SOP-BFP OPS-SQL Influent feed pump flows Equipment maintenance	Monitoring/Measurement Polymer pump speed (dose), polymer feed calibration, cake %TS, filtrate TSS, influent %TS Relevant reports in operations monthly process report database OPS-SQL Relevant screens in PCS Dewatering Equipment R&M reports in Hansen program.	Inadequate thickening leads to increased biosolids volumes that need to be transported and managed. Likelihood of accidents and the resultant potential for release of biosolids in an accident increases as traffic associated with hauling increases. Potential for odors needs to be recognized and addressed if problematic.
Biosolids Storage, Loading and Transportation	❖ NPDES Permit #MN0030171	❖ Storage bunker capacity ❖ Transportation ❖ Truck o loading o unloading o cleaning	❖	❖ SOP-Emergency Response Manual ❖ SOP-Hauling Manual ❖ % cake loading operations ❖ Routing protocol ❖ Emergency response ❖ Equipment maintenance	Monitoring/Measurement Storage bunker capacity Equipment R&M reports in Hansen program.	Inadequate storage capacity may result in the need to land apply during times of the year when field conditions are not ideal, resulting in the potential for movement of biosolids off-site. Control of loading/unloading practices is necessary to minimize the potential for spills/releases, exceedances of volumetric loading rates at application sites, and/or exceedance of weight limits on roads and resultant road damage. Proper route selection is necessary to minimize potential for road damage, to address issues associated with vehicular traffic, noise and traffic safety issues at field application sites. Potential for odors needs to be recognized and addressed if problematic. Control necessary to minimize potential for vehicular accidents.
Beneficial reuse (land application as an agricultural fertilizer replacement)	❖ NPDES Permit #MN0030171 ❖ Site selection, inspection and approval ❖ NR 204 and 40 CFR Part 503 site restrictions ❖ Biosolids quality-NR 204 and 40 CFR Part 503 ceiling concentrations ❖ Biosolids application rate	❖ ❖	❖ Nutrients for crops	❖ Annual report ❖ SOP-Emergency response manual ❖ MPCA field approval letters ❖ Field setup & flagging ❖ Application rate calculations ❖ NR 204 and 40 CFR management practices, loading rates and monitoring requirements ❖ Emergency response field approval	Monitoring/Measurement 1. Biosolids quality-Ag, Cd, Cn, Cr, Cu, Hg, Mo, Ni, Pb, pH, Se, Zn, P, K, TKN, NH3-N, TS, as required in Minnesota Rules 7041.1300, NPDES permit and/or 40 CFR Part 503 2. Routine soil test information-OM, P, K, pH 3. Biosolids application rates 4. Pathogen reduction 5. Vector attraction reduction Relevant reports on file. MPCA annual land application report Farmer's information sheet Soil analysis report	Control necessary to minimize potential for: * Application to unsuitable/sensitive sites * Negative impacts on groundwater or surface water resources * Noncompliance with local, state or federal rules * Environmental releases Also, the potential for odors needs to be recognized and addressed if problematic.
Landfill	❖ NPDES Permit #MN0030171	❖ Used only when land application is not possible	❖	❖ Annual report ❖ City does not have operational control	o Record the total amount hauled to landfill	Water quality through leachate

Table 2. Biosolids Value Chain Roles & Responsibilities Matrix (By Workgroup)

Workgroup	Collection & Pretreatment	Solids Processing	Stabilization	Thickening	Biosolids Storage, Loading and Transportation	Beneficial Reuse
Wastewater Superintendent	**L**	X	X	X	X	L
Maintenance Staff		X	X	X	X	
Contractor					X	X
Information Management Department						X
Infrastructure Crew	X					
Industrial Chemist	X					
Operations		**L**	**L**	**L**	X	
Process Chemist					**L**	X

Note: Lead responsibility denoted as **bold "L"**

Element 4: Legal and Other Requirements

Created/Approved: PM/JB
Date Issued: March 1, 2008
Date Last Reviewed: November 17, 2011
Date Last Revised: November 17, 2011

General

Identifying existing legal and other requirements that impact the various aspects of Mankato's biosolids value chain is extremely important. Most of the existing requirements are regulatory in nature, most of which are ultimately reflected in Mankato's NPDES permit. However, new regulatory, legal and legislative initiatives are periodically proposed by a variety of different organizations/agencies and a process needs to be in place to identify, track and assess the potential impacts of these proposed initiatives and new regulatory, legal and legislative initiatives.

Procedures

The general procedure used by Mankato to identify, track and determine the impact of regulatory, legal and legislative initiatives that may impact all the aspects of the Wastewater Treatment Plant's operation, including the biosolids reuse program and related elements in the biosolids value chain, is as follows:

The following approaches and/or tools are used as appropriate to identify and track various initiatives:

- Water Environment Federation publications
- NBP Weekly Biosolids updates
- Personal contacts with key individuals at local, state and federal agencies
- Staff participation on local, state and federal committees
- Staff participation on committees formed through professional organizations (e.g. MWOA, CSWEA, etc.)
- Workshop, seminar and technical conference attendance (e.g. MWOA annual seminar, Spring Biosolids Symposium, WEF-TEC, etc.)

The Utilities Superintendent and the BMP Coordinator are responsible for the overall coordination of the tracking functions. They may assign responsibility for tracking specific regulatory, legal and legislative initiatives to additional staff. The Utility Superintendent and/or the BMP Coordinator will:

Identify initiatives through review of information from various tracking mechanisms identified in the initiatives above.
Evaluate potential impacts on Mankato's biosolids reuse program.
Determine the level of future City's involvement in these issues, including the need to involve other City staff.

Once the need for additional involvement is determined, City staff with expertise specific to the areas in questions will typically carry out the day to day tracking, monitoring and reporting. The plant superintendent will be kept informed of any activity and then convey this information to the staff during weekly staff meetings.

Specific to Mankato's biosolids management program, the following procedure is used to ensure that new legal and other requirements are appropriately communicated and implemented:

Tracking mechanisms are consistent with the process identified above
The Plant Superintendent will be responsible for communicating new requirements (e.g. monitoring and reporting requirements) to affected parties. Communication may occur through a variety of mechanisms, including e-mail or internal memorandums. Hard copies or electronic versions of related documents will also be provided when available.
The BMP Coordinator will make any necessary changes to the BMP manual and/or supporting documentation.
The contractors will be made aware of the need to comply with legal and other requirements through the bid process

Table 3 identifies legal and other requirements specific to Mankato's biosolids land application program. The City's NPDES permit contains very specific regulatory and legal requirements. A summary of these requirements is provided in Table 4 and detailed information can be found through a direct review of the NPDES permit. Table 5 contains a list of other non-binding requirements at the State and Federal level that have a *reasonable likelihood* of impacting critical control points in other parts of the biosolids value chain and/or in the overall wastewater treatment process.

Table 3: Legal Requirements and Guidance Specific to the City's Biosolids Land Application Program

Regulation	Brief Description	Hard Copy (if available)
Federal Regulations		
(40 CFR Part 503)	Federal biosolids rule-Part 503	Conference Room
Part 503 Core Documents	Core documents including Technical Support Doc. Control of Pathogens and Vector Attraction in Sewage Sludge	Conference Room
OSHA	Occupational Health and Safety Program	Conference Room
State Regulations		
MN Rules Chapter 7041.1600	Recordkeeping	Conference Room
MN Rules Chapter 7041.1700	Reporting	Conference Room
Chapter 7041 Appendix A	Sewage Sludge Management Rules	Conference Room
NPDES Permit	Mankato's NPDES Discharge Permit	Conference Room
State Guidance		
MN Extension Service	Fertilizer Recommendations for Agronomic Crops in MN	Conference Room
MPCA	General Management Requirements for Agricultural Sites	Conference Room

Table 4: NPDES Permit Reporting Requirements and Related Reports Submitted on a Voluntary Basis (*shown in italics)* [1]

(Note: NPDES File is maintained in the Conference Room)

Monitoring	**Responsibility**
• Pretreatment	Industrial Chemist
• Influent quality	Industrial Chemist
• Effluent quality	Operations staff
• WET(toxicity) testing	Contracted
• Biosolids quality	Process Chemist
Reporting	**Responsibility**
• WET(toxicity) test reports	Utilities Superintendent
• Non-compliance notification	Utilities Superintendent
• DMR reports	Utilities Superintendent & Public Works Director
• Farmer	Process Chemist
• Approval to land apply	MPCA
• Land application site evaluation	Process Chemist
• Land application report	Process Chemist
• Mercury Minimization Plan	Industrial Chemist

Special reports

- *Special reports may be needed from time to time to satisfy a particular regulatory requirement. Responsibility for submitting these reports is dependent on the nature of the associated project.*

[1]Consult the NPDES Permit directly for monitoring parameters, frequency and report submittal dates.

Other Documents: Other Documents that may be followed for the biosolids program will be identified by management. Currently there are no other documents being used.

Table 5: Other Regulations/Guidance Applicable to Various Portions of the Biosolids Value Chain and/or the Overall Wastewater Treat

Federal	General Description	Website Location	CD Location	Hard Copy Location
40 CFR Part 403	General Pretreatment Requirements	www.epa.gov/epacfr40/chapt-I.info	None	Selected portions in Wastewater Superintendent office
	Wastewater Operator Certification	www.pca.state.mn.us/water/wwopcert.html	None	None
	How to be Certified or Maintain your Certification	www.health.state.mn.us/divs/phl/cert/index.html	None	None
	Current Regulations and Policies	www.health.state.mn.us/divs/phl/cert/index.html	None	None
	Approved Methods	www.health.state.mn.us/divs/phl/cert/index.html	None	None
	Environmental Laboratory Handbook FY 2003	www.health.state.mn.us/divs/phl/chem.html	None	None
	Bottle/Preservation/Holding Time Tables	www.health.state.mn.us/divs/phl/chem.html	None	None
CFR Title 40	Protection of Environment	www.epa.gov/epahome/cfr40.htm	None	Selected section in Wastewater Superintendent office
	Substance Registry System (SRS)	www.epa.gove/srs	None	None
EPA 833-R-04-002A	Local Limits Development Guidance	www.epa.gov/npdes/pub/final_local_limits_guidance.pdf	None	Wastewater Superintendent office Industrial Chemist office
EPA 833-R-04-002B	Local Limits Development Guidance Appendices	www.epa.gov/npdes/pub/final_local_limits_appendices.pdf	None	Wastewater Superintendent office Industrial Chemist office
RCRA	Hazardous Waste Management	www.epa.gov/region5/defs/html	None	Wastewater Superintendent office
EPA EN336	Guidance Manual for Preventing Interference at POTWs	www.epa.gov/npdes/pubs/owm0194.pdf	None	Wastewater Superintendent office
State				
Chapter 7001	Permits & Certifications	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7041	Sewage Sludge Management	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7050	Waters of the State	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7056	Mississippi River & Tributaries	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7060	Underground Waters	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7065	Effluent Standards for Disposal SystBMP: Interstate Waters of Lake Superior Drainage Basin and Interstate Waters of Lake St. Croix	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 7077	Wastewater and Storm Water Treatment Assistance	www.pca.state.mn.us/water/water_mnrules.html	None	None
Chapter 9400	Water and Wastewater Treatment Operator Certification Council Water Treatment	www.pca.state.mn.us/water/water_mnrules.html	None	None

	Certification			
MNDOT	DOT regulations	www.dot.state.mn.us/turck.html	None	None

Element 5: Goals and Objectives

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: May 5, 2011
Date last revised: October 6, 2011

General

The Mankato Wastewater Treatment Plant's Biosolids Management Policy identifies overarching goals and objectives for the City's biosolids management program. Specifically, the Wastewater Treatment Plant *"will pursue beneficial biosolids reuse options that protect human health and environmental quality, are cost effective and provide flexibility with respect to end use".* The policy also identifies a series of supporting objectives, which are listed below:

- Developing and implementing an Biosolids Management Program (BMP) for the City's biosolids management program.
- Following the Code of Good Practice for biosolids developed by the National Biosolids Partnership.
- Complying with all existing local, state and federal regulations.
- Maintaining a pretreatment program consistent with federal regulations and supported by MPCA.
- Participating in source reduction programs where appropriate.
- Periodically evaluating options that provide potential for increased and/or improved efficiencies.
- Maintaining monitoring programs that routinely track biosolids quality and information needs in areas deemed necessary by the Wastewater Treatment Plant.
- Periodically reviewing the existing biosolids programs and associated activities and making adjustments on an as-needed basis.
- Providing adequate training opportunities to personnel associated with the biosolids management programs.

The City of Mankato will undertake a more specific goal setting exercise on an annual basis, in accordance with the following procedures:

Procedures

1. The Wastewater Treatment Plant will establish a series of goals and associated strategies for its beneficial reuse program and supporting programs on an annual basis. The goals and strategies will be finalized no later than March 31st of each year.

2. The BMP Coordinating Team will establish a draft set of goals and strategies. The draft goals and strategies will be based on consideration of:
    - The Wastewater Treatment Plant's Biosolids Management Policy.
    - Input (if any) received throughout the year from the general public, farm customers, regulators, elected officials and other interested parties (See Element 6).
    - Input from the Wastewater Treatment Plant staff.

3. Each goal will include a short statement identifying its benefit to overall biosolids management activities.
4. Each of the four "outcomes matter" identified by the NBP will have at least one corresponding goal developed by the City of Mankato.
5. Goals will be established using SMART criteria (Specific, Measurable, Achievable, Relevant and Time-Bounded).
6. The draft set of goals and strategies will be presented to the Director of Public Works for review and comment. Modifications will be made by the BMP Coordinator as deemed appropriate.
7. The final set of goals and roles/responsibilities will be shared with upper level management, including the Director of Public Works. They will also be included in the annual biosolids management program report (See Element 17).
8. The BMP Coordinator will be responsible for tracking progress on each goal at intervals deemed appropriate by the BMP Coordinator. Progress will be noted on the action plan template. Once a goal is achieved, it will be added to the biosolids program. Training and any necessary changes to the BMP will also be completed.

2011 Goals & Objectives

Strategic Focus Area	Goal	Objective	Person Responsible	Proposed Completion	Date Completed
Beneficial Reuse					
	100% Land Application	Obtain 3 new fields for applications	Patti, TJ	9/1/2011	12/31/11
		Have an annual average of 20% cake	Operators	12/31/2011	12/31/11
	Energy reduction				
		Energy savings study	Mary	12/31/2011	Blowers
		Implement any approved energy reduction measurements that has a 10 year or less payback	JB	12/31/2015	
Public Acceptance					
	Continue Public Acceptance for public and users	Hold at least 1 biosolids presentation to interested parties	JB	2/31/2012	3/2011
		Increase hits to the website by 10%	JB	12/31/2012	
Regulatory Compliance	Maintain 100% Compliance				
		Annual calibration of equipment such as pumps and flow meters	JB	12/31/2011	12/31/11
		Permit deadlines put on outlook to not miss any deadlines	JB,TJ,Patti	12/31/2013	12/31/11
		Mercury Minimization Plan	Jim Archer	12/31/2016	
Environmental	Reduce Green House Gas Emmissions				
		Dystor replacement	JB	12/31/2012	
		Repair of methane gas flare	JB	12/31/2012	
		Clean all three digesters for better	JB	12/31/2015	
	Reduce Pharmaceutical in wastewater influent				
		Make list of all hospitals, clinics, and pharmacies	JA	12/31/2012 12/31/2011	
		Send out flyers with MPCA	JA	12/31/2012	

		recommendations and track participation levels

pm/2011

Element 6: Public Participation

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: September 27, 2011
Date last revised: October 6, 2011

General

The City of Mankato has a well managed biosolids reuse program which has been in place since 1980 when the Minnesota Pollution Control Agency first began a regulatory program. Although public interest has been low the City has provided information to the public through various means. There was a local "Mankato Minute" produced to inform the public on wastewater needs prior to the 2000 plant upgrade which included biosolids and aired on the local public access television channel. The City of Mankato has participated at the Minnesota State Fair biosolids public awareness booth. Communication with the local farmers has been and continues to be involved and efficient.

Procedure

1. The City of Mankato will provide several opportunities for the public to participate in the planning process.
2. Where reasonable and appropriate or when legally required, opportunities will be provided for the public to formally participate in planning processes. This determination will generally be made by the BMP Team and the BMP Coordinator.
3. Opportunities will be available for the public to provide input through less formal avenues. Informal participation opportunities are described below.
4. Information on the third party verification process will be shared with the interested parties (See Element 9), using any of the participation opportunities identified below, as deemed appropriate by the BMP Coordinator.
5. The Wastewater Treatment Plant will record and respond to input received from interested parties. The response will vary depending on the nature of the input received. The methods of recording and responding may also vary and will be left to the discretion of the respondent. Available methods include, but are not limited to, phone calls/logs, complaint forms, e-mails, letters, memorandums, transcripts from public meetings/hearings, etc.
6. Written and oral input from interested parties will be documented into the biosolids logbook. This input will be discussed when planning the goals and objectives.

Participation Opportunities

1. **Information letters** –Letters are sent to participating farmers in the spring of each year, providing information on such topics as nutrient management, land availability, biosolids quality and the City's BMP program (farmer mailing list). Participating farmers are encouraged to call with questions/comments. They are also invited to an annual open house held at the wastewater plant.
2. **Website** – The City maintains a website that contains information on a variety of City-related activities, including the City's biosolids management program and the BMP program. Included on the website is a contact button that people can use to e-mail the City with specific questions/comments regarding any aspect of the City's operations. The Public Works Dept. is responsible for maintaining the biosolids information on the website.
3. **Newsletters** – The "City Newsletter" is a newsletter prepared by City staff on an approximately quarterly basis and distributed to City employees, customers and other interested parties. Recipients are kept informed of City activities, including those associated with the biosolids management program and the BMP.
4. **Fact sheets** – Fact sheets are prepared by the BMP Team and are used primarily as a form of internal communication. They are available in hard copy format. Information associated with the City of Mankato's biosolids program and the BMP is placed in the fact sheets on a periodic basis.
5. **Newspaper, radio and television** – Wastewater Treatment Plant staff work cooperatively with the media and have, in many cases, been proactive in encouraging stories, articles, etc. Feedback (if any) from these stories/articles can be useful in helping the City of Mankato make minor adjustments to various aspects of its operations.
6. **Plant tours and presentations to school/community groups** – The City of Mankato Wastewater Treatment Plant provides general plant tours to a wide variety of school/community groups and other interested parties. Tours include mention of the biosolids program. In addition, presentations (both general and issue specific) have been made to these groups, usually in response to invitations issued to these groups. Similar to the Wastewater Treatment Plant's work with the media, feedback received during these presentations have, at times, been useful in helping the City make minor adjustments to various aspects of its operations.

Element 7: Roles and Responsibilities

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: November 17, 2011
Date last revised: November 17, 2011

General

Clearly identifying roles and responsibilities are important to the success of both the biosolids management program and the BMP. Without a clear definition of roles and responsibilities, the likelihood of failing to comply with operational and regulatory requirements significantly increases.

Procedures

1. Roles and responsibilities for various individuals/work groups (including contractors) that are specific to the BMP are assigned by the BMP Coordinator. They are reviewed by the internal BMP work group on an annual basis.
2. The BMP Coordinator will also review existing roles/responsibilities whenever significant operation changes are made to ensure that roles/responsibilities are appropriately defined. Revisions to the roles and responsibilities tables are made by the BMP Coordinator.
3. The City of Mankato, through the annual budget process, is responsible for obtaining the human, technical, and financial resources necessary to effectively execute the respective responsibilities as listed below.
4. General descriptions of the roles/responsibilities for various positions/work groups are provided below. The Union Contract contains detailed job descriptions for represented employees.
5. Table two outlines the Biosolids Value Chain Roles & Responsibilities.
6. A copy of the Service Agreement outlining the contractor responsibilities and other requirements for biosolids activities.
7. A flowchart showing the lines of authority is provided at the end of this element.

Public Works Director
The Public Works Director is responsible for the overall operation of the Public Works Division. In addition, he plays a major role in tracking legal, legislative and regulatory initiatives at the local, state and federal level.

Deputy Director of Public Works-Environmental Services
The deputy director is responsible for the day to day operation of the Public Works Division. She is responsible for budgeting, inventory control, purchasing, customer relations, and coordinating utility functions with other City services and functions. She will also participate in the management review.

Utilities Superintendent
The Utilities Superintendent reports to the Deputy Director and has overall management responsibility for the activities of the following departments:

- Laboratory
- Operations
- Maintenance
- Pretreatment
- Buildings and grounds
- Biosolids program

The Utilities Supervisor is responsible for coordinating activities within the various departments, for establishing overall direction, determining broad priorities and ensuring that all aspects of the operation and maintenance of the treatment facility are conducted in an efficient, cost-effective manner and are compliant with existing rules and regulations. He will be a participant on the BMP internal audit team. This person will provide any necessary training for the BMP and biosolids program.

Process Chemist
The Process Chemist reports to the Utilities Supervisor and is responsible for the day-to-day operation of the biosolids program. This includes:

- Farmer contact
- Scheduling
- Field setup
- Site inspection
- Sampling
- Data entry
- Report generation
- Interaction with local elected officials
- Interaction with regulatory agencies
- Communication with and supervision of crew and contractors
- Contract compliance

- The Process Chemist is also responsible for the overall operation of the Wastewater Treatment Plant's laboratory. Laboratory staff carries out daily operations within the lab. This person is the BMP Coordinator.

Plant Foreperson
The Plant Foreperson reports to the Utilities Superintendent. He will supervise the contractor. Job responsibilities include planning, scheduling, and supervision of operational and maintenance employees at the wastewater plant. This person will also be part of the BMP team.

BMP Coordinator
The BMP Coordinator reports directly to the Utilities Supervisor. He/She is responsible for ensuring compliance the biosolids management program and with all BMP requirements including reporting BMP reviews, revisions, and reports to management. In addition, he/she plays a major role in tracking legal and legislative initiatives at the local, state and federal level.

Street Department
Truck drivers report directly to the Street Department Foreperson. The truck drivers operate the hauling equipment used to get the biosolids out to the application sites. They are responsible for following instructions necessary to ensure that operations are conducted in a safe and environmentally sound manner. In addition, they are responsible for completing trip tickets that are one of the primary sources of information for load tracking and regulatory reporting.

Water Quality Specialist
The water quality specialist will be responsible to ensure site containment and asses any environmental impacts if there would be a biosolids spill.

Industrial Chemist
The Industrial Chemist reports to the Utilities Superintendent and is responsible for all aspects of the City of Mankato's pretreatment program. This person will be part of the internal audit team. Specific responsibilities include:

- Identification of significant industrial users (SIU's)
- Annual inspections
- Compliance monitoring
- Recordkeeping
- Site visits to non-permitted facilities

Operators
The operators report directly to the Utilities Foreman. They are responsible for the day-to-day management of the liquid and solids treatment system and for ensuring compliance with all regulatory reporting requirements. The operators are also responsible for performing the daily operations necessary to ensure that the plant performs in a satisfactory manner. One operator will be part of the internal audit team.

Contractor
The City of Mankato uses a contractor for biosolids application capabilities. The contractor supplies owner/operator spreaders and drivers to drive the spreading equipment. They will maintain a Type IV biosolids certificate. The contractor is responsible for following instructions necessary to ensure that operations are conducted in a safe and environmentally sound manner. Additional responsibilities are identified in the contract document. It is important to note that the City structures contracts as such that it ultimately maintains all responsibility for sighting, monitoring/sampling and regulatory reporting.

Farmer
The farmers' responsibilities are to provide accurate information about the land on which the biosolids will be applies. It is also their responsibility to inform the Wastewater Treatment Plant of any nutrient applications prior to the Wastewater Treatment Plant biosolids application. The farmer will also supply information about tile depth and locations.

Utilities Technician A
The Tech A/maintenance person is responsible for the repair and regular maintenance of plant and lift station equipment.

BMP Team
The BMP team consists of the Plant Foreman and the Process Chemist. They will be responsible for the BMP program training, document reviews and continued public awareness.

BMP Internal Audit Team
The internal audit team consists of the Wastewater Superintendent, Loss and Control Coordinator, Industrial Chemist and a plant operator. This team will be responsible for the internal audits of the BMP program.

Element 8: Training

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: November 17, 2011
Date last revised: November 17, 2011

General

Training plays an important role in overall job performance. The City of Mankato demonstrates the importance of training through weekly staff meetings and safety programs.

In recognition of the importance of training, the City of Mankato has a full-time Loss and Control Coordinator on staff.

The City of Mankato has several different structured training programs including:

- Formal training events
- AWAIR Program

Less formal training also occurs through a variety of mechanisms, including, but not limited to:

- Staff meetings
- On-the-job training
- Review of internal reports
- Review of external publications
- Safety and emergency response training sessions

Procedures

1. Structured training programs (see above) have well defined training requirements that must be followed. Additional training is generally based on performance needs as determined by the supervisors.
2. General safety training is coordinated by the Loss and Control Coordinator. The Loss and Control Coordinator is responsible for documenting employee participation in training activities and keeping them on record. All safety and educational training will be reported to the Loss and Control Coordinator to document.
3. Formal training hours are documented with the Loss and Control Coordinator in the Public Works Department. She uses a computerized maintenance management system through the use of Microsoft Excel. Detailed reports on training activities are available from this system.

4. With the respect to the biosolids value chain and the BMP; the following process will be used to ensure that both City employees and contractors have a general awareness of these two areas and how their jobs relate to these areas. The BMP Coordinator is responsible for implementing these steps:

    - One formal presentation on the BMP will be made annually during a plant meeting.
    - Employees and contractors working directly with the biosolids program will receive more specific information on the BMP and the Biosolids Value Chain through additional crew meetings during the hauling season.
    - Contractor participation in training activities is required per contract language.
    - New employees receive BMP training as part of the initial orientation process
        - This is accomplished electronically by viewing a PowerPoint presentation describing the City's BMP program.
    - All employees have had National Incident Management System Training. (NIMS)
    - Training records will be reviewed as part of the annuals BMP review.

5. The BMP Coordinator will identify relevant training opportunities for contractors that the City of Mankato has entered into service agreements with, including general BMP awareness training. Documentation will be put into the communication log book.
6. As part of the Service Agreement with the contractors, the supervisor is required to have a Type IV waste disposal facility operators' license. The contractor and anyone else involved in the biosolids land application process will be given BMP awareness training. Attendance will be documented and sent to the Loss and Control Coordinator.
7. In the Job description 3 ring binder, the required job training for each employee is listed. Also listed is any additional license or certificate that person may have that are beyond the basic requirements.

Element 9: Communication

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: September 27, 2011
Date last revised: October 7, 2011

General

The City of Mankato is committed to proactively communicating information on the biosolids operations, including the BMP program, both internally and to any interested external individual or agency. Public confidence in the biosolids program is very high, due in part to the Wastewater Treatment Plants communication efforts which are designed to provide ongoing information regarding the biosolids and related activities. The City of Mankato's communication efforts are consistent with legal requirements, the degree of current public interest, historical levels of public involvement and related local circumstances. Given the structure of the City's service contract, contractors do not play a formal role in the City's communication effort.

Procedures

Identification of interested individuals or agencies:

1. List/lists of individuals/agencies interested in the City of Mankato's biosolids program and/or BMP related activities has been developed and is maintained by the BMP Coordinator. Current includes:
    - Agricultural Agencies
    - Farmers and land owners participating in the land application
    - Miscellaneous individuals who have expressed an interest in the biosolids program through direct contact with Wastewater Plant personnel, etc.
2. Contact information for these individuals/agencies are currently contained in the biosolids log book and are maintained and updated by the BMP team. Additional individuals interested in being added to the list simply need to contact the BMP Coordinator. Notification and contact information are provided on the City's website.

Communication approach:

1. The BMP Coordinator and the Wastewater Superintendent will have primary responsibility for ensuring effective communications on the part of the Wastewater Treatment Plant as it relates to the biosolids program and the BMP. Contractors may

play a role in the City of Mankato's communications approach, but are not required or expected to develop their own communication approach.

2. Information to be made available upon request to interested parties will include the following:
    - BMP Manual – including the City of Mankato Biosolids Management Policy
    - Biosolids Management Performance Reports
    - Information related to independent, third part BMP verification audit reports
    - Role of outside contractors relative to the Wastewater Treatment Plant's communication activities, if any
    - Other pertinent information regarding the biosolids management activities
3. Information that can be found on the City's website includes:
    - BMP Manual – including the City of Mankato Biosolids Management Policy
    - Information related to independent, third part BMP verification audit reports
    - Other pertinent information regarding the biosolids management activities

4. Specific approaches and tools used to facilitate communication and the frequency of use are left to the discretion of the BMP Coordinator and the Wastewater Superintendent. Brief descriptions of the approaches/tools that have been used successfully in the past are identified below. Note that many of these approached/tools are also used to facilitate public participation (see Element 6).
5. The Wastewater Treatment Plant recognizes that communication initiated by interested parties and other individuals may take a wide variety of forms including telephone calls, letters, emails, meeting participation, internet contact and other forms. The City of Mankato will give equal weight to all forms of communication.
6. An effort will be made to initially respond to all inquiries or requests for information within a timely manner of receipt of the inquiry or request. Complex inquiries/requests may require additional response time.
    - Simple inquiries/requests for information may not be documented; the individual responding will use their professional judgment to determine if it falls into one of these categories:
        - Requests for information brochures
        - Phone calls related to routine questions
    - Significant inquiries/requests for information will be documented, such as:
        - Detailed requests for information from homeowners, regulators or elected officials
        - Acceptable documentation include letters, memorandums, email records, telephone logs, written meeting summaries,

notes to file, entry into an electronic database or other similar methods

Communication Tools

A wide variety of tools are used to facilitate both internal and external communication. Information communicated may be either general information about the Wastewater Treatment Plant operations or it may be specific to the biosolids program and the BMP related activities. Specific tools used and the frequency of the use are left to the discretion of the BMP Coordinator. A brief description of each of these tools follows. Note that many of these tools are also used to facilitate public participation (see Element 6).

Internal Communication Approaches/Tools:

1. **Staff and Project Specific Meetings** – these meetings are held on an "as needed" basis and determined by management and used for discussion of workloads, project status, important emerging issues and other pertinent information. The staff also participates in the "good idea" and "how come…?" programs. This helps open lines of communication between staff and management on plant operations.
2. **Newsletters –** The "City Beat" is a newsletter prepared by City of Mankato staff on quarterly basis and distributed to City employees, customers and other interested parties. Recipients are kept informed of City activities including those associated with the biosolids program and the BMP.
3. **Plant Meetings –** held on a regular basis. They are informational in nature with presentations covering biosolids special projects, operations, pretreatment, maintenance, laboratory, weekly tasks, and safety. The entire plant staff attends.
4. **Daily Communication –** This includes telephone, two way radio, direct contact, and written communication covering topics of general plant operations and critical control points.

External Communication Approaches/Tools:

In addition to the participation opportunities listed in element 6, the following external communication tools can be utilitzed:

1. **Annual Report –** Minnesota State Statutes Chapter 7 to 41 requires that municipal sewerage facilities prepare an annual report of its official transactions, planned additions and major changes in the City facilities and services. Copies of the reports are filed with the MPCA and EPA. The City of Mankato prepares the annual report which contains discussions of activities related to the biosolids program including the BMP.
2. **Health Complaints –** The BMP team will follow the guidelines set forth in the WERF, (Water Environment Research Foundation) "Epidemiologic Surveillance and Investigation of Symptoms of Illness by Neighbors of Biosolids Land Application Sites."

3. **City website –** The City of Mankato Wastewater Treatment Plant is part of the official city website and can be contacted through this site.

Element 10: Operational Controls at Critical Control Points

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: September 27, 2011
Date last revised: October 7, 2011

General

Operational controls include documents, standard operating procedures, work practices, instrumentation/process controls, preventative maintenance procedures, monitoring, measurement or other activities that are required to ensure that critical control points are effectively managed and that all applicable legal/other adopted requirements are met.

Elements 3 and 10 are closely linked. Element 3 contains detailed documentation of critical control points, related operational controls, roles and responsibilities and environmental outcomes. Reference is made to documentation and discussions associated with Element 3, including Tables 1 and 2.

Procedures

- The operational controls have been identified by the City of Mankato's internal BMP Team, based on consideration of information contained in the National Manual of Good Practice, WEF Manuals of Practice and other similar information sources; as well as personal experience of City staff. Operational controls and related procedures include preventative maintenance procedures, work management systems and any relevant contracted procedures. Current operational controls are found in Table 1 of the BMP Manual.
- Operational controls will be reviewed by the BMP Team on an annual basis to be conducted during the third quarter internal audit or whenever significant changes in plant processes and/or operations occur. Revisions (if any) to Tables 1 and 2 and associated SOP's will be made by the BMP Coordinator following these reviews.
- Changes will be documented in writing and will be noted in the annual biosolids program report.

Element 11: Emergency Preparedness and Response

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: December 17, 2010
Date last revised: October 29, 2009

General

Having well defined Emergency Preparedness and Response procedures are an important aspect of biosolids management activities. These procedures help to minimize the risk associated with unusual or emergency situations that can potentially impact human health or environmental quality. An emergency is an incident where either life, or health of staff or the environment is put at risk.

Procedures

1. If there is risk to staff, call 911.
2. If there is risk to the environment, call the Minnesota Duty Officer.
3. The Wastewater Treatment Plant has developed a comprehensive "Emergency Response Manual" (ERM) which is formally reviewed and updated a minimum of once every three years. Interim revisions to specific sections of the ERM are made on an "as needed" basis. The City's BMP Coordinator is responsible for coordinating the formal review and update of the ERM.
4. The Emergency Response Manual establishes clear protocol for how a wide variety of situations should be handled. Copies of the Emergency Response Manual are made available to employees in hard copy form.
5. Testing and training with respect to safety and emergency response procedures are conducted on a periodic basis as determined by the City's Loss and Control Coordinator and Wastewater Superintendent. The Loss and Control Coordinator will keep training records on file.
6. Contracted activities are generally limited to the application of biosolids that are supervised and managed by Wastewater Treatment Plant staff. Therefore, relevant portions of the Wastewater Treatment Plant's Emergency Response Manual are applicable to these contracted activities and the contractor is not required to develop their own Emergency Response and Preparedness Plans. In case of an emergency, the contractor will immediately contact the WWTP to begin the WWTP emergency response plan.

Element 12: BMP Documentation and Document Control

Created/Approved: PM/MF
Date issued: March 1, 2008
Date last reviewed: November 17, 2011
Date last revised: November 17, 2011

General

The City of Mankato has established and maintains documentation for the biosolids management program including seventeen elements of its BMP. Procedures have been established to ensure that the biosolids management program documentation is readily available, has been created following established document creation protocols, is kept up to date through periodic reviews and revision and is properly documented with version information. Record retention periods are also available.

Procedures

1. Documents related to the City's BMP program or relevant biosolids management activities that are controlled documents are listed in table 12.1.

   These documents are controlled by the plant foreman to see that they are reviewed and approved, legible and identifiable, current revision is available, and obsolete versions removed.

2. Records that require control listed in table 12.1.

   The above documents are controlled by the BMP coordinator to see that they are identifiable, secure, and accessible.

3. The master document is the controlled document and will be maintained in an electronic format. The master document will contain a header or footer stating that printed versions are uncontrolled. It is located in the Share file of our computer system.
4. Regulations, guidance documents and other similar materials generated by external agencies (e.g. EPA, NBP, NACWA, and WEF) that are cross-referenced in the BMP manual are not subject to these documentation and document control procedures.
5. Standard operating procedures and the BMP manual will contain the following document control information:
   - Created /Approved By:
   - Date Issued:
   - Date Last Reviewed By:

- Date Last Revised: By:

6. Policy Statements will contain the following document control information:
   Approved By:
   Date Approved:
   Previous Revision Dates:
   The City of Mankato WWTP does not have any policy statements at this time.
7. Data resulting from monitoring and measurement activities is retained either on hard copy or by OPS-SQL. This information is retained indefinitely although it may be passed to history files and stored off-line to ensure efficient operation of servers.
8. Contractors are not required to provide documentation for the biosolids program since the city oversees the entire application process.
   The BMP Coordinator has sole responsibility for updating/revising the BMP manual to reflect current practices. The BMP Coordinator will notify the BMP team regarding significant changes to the BMP manual through team meetings. Minor grammatical edits, links to new or revised documents, etc are not considered significant changes. Updates/Revisions will generally be made in response to one or more of the following:
   Internal Audits
   External Audits
   Operational changes
   Annual review of Critical Control Points, Operational Controls and Biosolids Program Goals
   Annual Biosolids Management Program Performance Report
   A checklist has been made to ensure a complete review of the biosolids program.
9. The emergency plans, service agreements, and job descriptions are all located in a 3 ring binder in the conference room.
10. As referenced in Element 8, the Loss and Control Coordinator will keep all training records on file at his/her location.

Table 12.1

Biosolids BMP Related Documentation and Retention

Responsible Party	Document Description	Location	Retention Period
Plant Superintendent	Pretreatment Inspections	Superintendent's office	Life
	SIU permits	Superintendent's office	Life
	NPDES permit	Superintendent's office	Life
	NOV/response correspondence	Superintendent's office	Life
	Job descriptions	Conference room	Until rescinded
	Training programs		
	Monitoring & Measurement	OPS SQL/CarteGraph	Life
Plant Foreman	Operational SOPs	Conference room	Until rescinded
	Contractor Bids	Operators office	Life
	Contractor Service Agreements	Operators office	Life
	Interested Party Open House	Operators office	Life
	Emergency Response Manual	Conference Room	Life
Process Chemist	Laboratory QA/QC	Process Chemist office	Life
	Laboratory SOP's	Process Chemist office	Life
	Laboratory Bench Sheets	Process Chemist office	Life
	Biosolids Annual Report	Superintendent's office	Life
BMP Coordinator	BMP manual	Share file/internet	Life of BMP program
	List of Critical Control Points	Conference Room	5 years
	List of Legal Requirements	Conference Room	5 years
	Goals & Objectives	Conference Room	5 years
	Previous Goals & Objectives	Conference Room	5 years
	Input from Interested Parties	Conference Room	5 years

Loss and Control Coordinator	Training Records	Loss and Control Coordinator Data base	Life of employment

Element 13: Monitoring and Measurement

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: September 27, 2011
Date last revised: October 7, 2011

General

Monitoring and measurement activities conducted by the Wastewater Treatment Plant generally fall into one of the following three categories:

- Activities conducted to demonstrate compliance with legal/regulatory requirements.
- Activities conducted to document performance at critical control, operational control points (See Table 1), and contractor activities.
- Activities conducted to track progress toward achieving biosolids program goals and objectives.

The City's NPDES Permit identifies monitoring, measurement and reporting requirements specified by the State and EPA. The Wastewater Treatment Plant also conducts additional monitoring to measure performance at critical control points. Contractors will be monitored and will be documented in the logbook. The document CCP-OC contains a comprehensive listing of monitoring and measurements, complete with links to the associated databases, reporting systems, etc.

The City uses a computerized data management and reporting system which has been customized to meet the specific needs of the Wastewater Treatment Plant. This system consists of three distinct but inter-related databases: OPS Systems, Cartegraph and SCADA.

Procedure

1. Monitoring and measurement activities will be reviewed by the City's internal BMP Team on an annual basis to be conducted during the third quarter internal audit or whenever significant changes in plant processes and/or operations occur. Revisions (if any) to Tables 1 and 2 and associated SOP's and monitoring/measurement documents (See CCP document) will be made by the BMP Coordinator.
2. Analytical or instrumentation data is stored electronically in relevant databases as follows:

   SCADA System – The Wastewater Treatment Plant employs a sophisticated computerized process control system to collect real time information from instruments and sensors located throughout the treatment plant. The process control system is maintained by the operators, with

assistance provided by contract technicians. Revisions to the system (e.g. changing of set points, flags, additions/deletions of parameters, etc.) are made by the operations staff.

Cartegraph System – Pertinent information associated with samples analyzed by the City's laboratory is stored in the Laboratory Information System. This includes, but is not limited to, raw data, QA/QC data, chain of custody information, analyst information and analytical methodologies. The Laboratory Information System is maintained by the Laboratory Manager with assistance provided by Information Systems staff.

OPS-SQL System – A subset of data generated in both the process control system and the laboratory information system is transferred to the Wastewater Treatment Plant's computerized operations software. The OPS system contains both raw and consolidated data (e.g. hourly averages) and includes customized reports that allow Wastewater Treatment Plant staff to monitor various plant processes, satisfy legal/regulatory reporting requirements and evaluate progress toward achieving specified goals and objectives. The OPS system also has information on pertinent regulatory limits and all laboratory information. The OPS system is managed by supervisors, operators and laboratory staff. These individuals are also responsible for making revisions to the system (e.g. changing of set points, flags, addition/deletion of parameters, modifying report formats, etc.) on an "as needed" basis.

3. Progress towards meeting goals and objectives (Element 5) will be tracked at intervals deemed appropriate by the BMP Coordinator. Progress will be noted on the action plan template, which is included under the Element 5 procedures.

4. The Utilities Superintendent is responsible for evaluating the need for monitoring and measurement activities (if any) on the part of the contractor and incorporating necessary language into the service agreement(s). The BMP Coordinator will be responsible for making any necessary changes to the BMP manual and supporting material to reflect monitoring and measurement responsibilities required on the part of the contractor.

Element 14: Preventive and Corrective Actions

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: December 21, 2011
Date last revised: December 22, 2011

General

The purpose of this element is to establish, document and maintain procedures for investigating noncompliance with legal/regulatory and other requirements, including conformance issues that may arise from monitoring/measurement activities, BMP protocols or non-conformances noted as a result of internal or external BMP audits.

Procedures

1. **NPDES Related Legal/Regulatory Non-conformances** – Legal/Regulatory Requirements are either specifically identified in the City of Mankato Wastewater Treatment Plant's NPDES Discharge Permit or are incorporated by reference. The permit contains procedures for investigating non-conformances legal/regulatory requirements identified in the permit. The following table identifies the general areas of the Wastewater Treatment Plant's biosolids value chain having legal/regulatory requirements that are addressed in the permit, the person responsible for investigating non-conformances in these areas and the section of the permit that contains the non-conformance procedures:

General Area	Responsible Person(s)	Procedure (NPDES permit section)
Pretreatment	Industrial Chemist	Chapter 5
Operations	Utilities Superintendent Operators	Chapter 5
Biosolids Reuse	Process Chemist	Chapter 6

2. **BMP Non-conformances Identified During Internal Audits**

   Internal audits will be conducted in accordance with procedures developed under Element 16.

   An audit worksheet will be completed for each element audited. The worksheet will contain the following information:

   1. Element #.
   2. Audit type (e.g. internal or external audit).
   3. Auditor's name.
   4. Period being audited.
   5. Audit date(s).
   6. Summary of findings.

7. Non-conformances (if any) and cause.
8. Corrective actions already taken (if any).
9. Recommended additional corrective actions (if any).
10. Person(s) responsible for implementing corrective action(s).
11. Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any).
12. Estimated completion date.
13. Method of tracking progress.

The auditor will complete 1 – 9 above, as well as all specific questions contained in the worksheets. The NBP Third Party Auditor's Guidance document will be available as a resource to the audit team.

Completed worksheets will then be submitted to the BMP Coordinator. The BMP Coordinator will complete 10 – 13 on the worksheet. This may be done by completing the appropriate sections directly on the worksheet or addressing them through a separate written report.

The BMP Coordinator is responsible for tracking progress. Progress will be tracked using methods that the BMP Coordinator deems appropriate. Progress will be tracked at each internal audit and will be documented by completing the tracking sheet which is included as part of the audit worksheet.

The BMP Coordinator will prepare and submit a written report to the internal BMP team and the Utilities Superintendent by June 15th of each year, summarizing the internal audit results and corrective actions (if necessary) that have already been taken or will be taken to address any non-conformances. The audit report may be a stand-alone document or may be included as part of other prepared reports (e.g. Biosolids Management Performance Report). The audit report will be available to the Public Works Director and will be available upon request. Corrective Action worksheets will be three hole punched and stored on file at the Wastewater Treatment Plant.

3. BMP Non-conformances Identified During Third Party Audits:

Third party audits will be conducted in accordance with the procedures identified by the National Biosolids Partnership.

Audit reports will be submitted to the Wastewater Treatment Plant's BMP Coordinator.

If the auditor identifies non-conformances, the BMP Coordinator will follow the steps listed under 2(b – f).

Minor non-conformances will be corrected within a 30-day period and major non-conformances will be corrected within a 90-day period, unless the auditor and the Wastewater Treatment Plant agree that these timeframes need to be extended.

Corrective Action Plan

To Be Completed by Employee CAN#

Date: Location:

Name:

Nonconformance Issue:

Possible Solution and Time Required to Implement Solution:
Number of Days:

Has This Issue Occurred Before? (Explain)

To Be Completed by Management

Root Cause:

Preventative Measures & Recommended Solution:

Person Responsible for Action:

Scheduled Completion Date:
Actual Completion Date:

Close Out Date: Signature:

Tracking Page

Date:

Element:

Reviewed By:

Required Correction:

Action Taken:

Person Responsible for Correction:

Tracking Progress:

Correction Completion Date:

Completed by:

Element 15: Biosolids Management Performance Report

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: December 21, 2011
Date last revised: December 22, 2011

General

The Wastewater Treatment Plant will periodically prepare a performance report that provides summary information on a wide variety of activities associated with the biosolids management program(s) and the BMP.

Procedures

1. The BMP Coordinator will prepare a written report on an annual basis that summarizes the performance of the biosolids management program. The performance report will be completed by June 15th of each year and will address performance during the previous calendar year. At a minimum, the report will contain the following information:

    An introduction about the plant and anything that may have changed as a plant as a whole.
    Summary of the activities performed to support the four key outcomes
    Summary of the monitoring and management of the biosolids value chain.
    A summary of internal audits (See Element 16).
    Summary of the current year goals and objectives.
2. The performance report will be available to the Public Works Director and will also be available upon request to the general public.

Element 16: Internal BMP Audit

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: December 21, 2011
Date last revised: December 22, 2011

General

The City of Mankato will conduct periodic internal audits of the BMP program in order to maintain the elements of the system and to make sure necessary changes and updates are included. The audit will cover performance relative to policy, goal and objectives and other performance measures.

Procedures

- The City of Mankato will conduct internal audits of the BMP program on an annual basis, except in those years when a formal third party audit is conducted.
- Internal audits will be completed annually and will address program activities completed during the previous calendar year.
    - Conducted by the Wastewater Treatment Plant's internal BMP workgroup under the direction of the BMP Coordinator
    - Will evaluate performance relative to the 17 Elements of the Wastewater Treatment Plant's BMP program and will include any applicable contractor activities
- Each member of the Wastewater Treatment Plant's internal BMP team will be responsible for auditing selected elements of the BMP. Audit responsibilities are subject to change at the discretion of the BMP program and will include any applicable contractor activities.
- Each member of the Wastewater Treatment Plant's internal BMP team will be responsible for auditing selected elements of the BMP. Audit responsibilities are subject to change at the discretion of the BMP Coordinator. Currently the internal audit team is as follows:
    - Pant Superintendent
    - Plant Foreperson
    - 1 or 2 Plant Operators
    - Process Chemist
- Each Internal auditor will be given a sheet listing the minimum conformance requirements for the elements they are auditing
- All documents and records related to internal audits will be maintained in the City of Mankato Wastewater Treatment Plant's shared file in the computer system.
- The City of Mankato's third party auditor's guidance document and other appropriate documents will be made available as a resource to the audit team. Auditors will utilize one or more of the objective methods listed in the third party auditor's guidance

document to evaluate conformance. The objective methods listed in the auditor's guidance are as follows:

Document and records review
Interviews
Direct observation

Auditors will complete an audit worksheet that is specific to each element. The worksheets request basic information and also identify the minimum conformance requirements for each element based on information contained in the City of Mankato third party auditor's guidance document. Specific information contained in the worksheets include:

a. .Element being audited
b. Audit type (e.g. internal or external audit)
c. Auditor's name
d. Period being audited
e. Audit date
f. Summary of findings
g. Nonconformance and cause (if any)
h. Corrective actions already taken (if any)
i. Recommended additional corrective actions (if any)
j. Person(s) responsible for implementing corrective action(s)
k. Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any)
l. Estimated completion date
m. Method of tracking progress

The auditors will complete "a" through "e" of the above tasks as well as all specific questions contained in the worksheets. Completed worksheets will then be submitted to the BMP Coordinator.

The BMP Coordinator will complete "f" through "m". This may be done by completing the appropriate sections directly on the worksheet or addressing them through a separate written report.

Nonconformances will be addressed using the procedures identified in Element 14.

The BMP Coordinator will prepare and submit a written report to the internal BMP team and the Wastewater Treatment Plant's Utilities Superintendent by June 15th of each year. This would summarize the internal audit results and corrective actions that have already been taken or will be taken to address any nonconformances. The Audit Report maybe a stand alone document or maybe included as part of other prepared reports (e.g. the Biosolids Management Performance Report). The audit report will be available in hard copy at the Wastewater Treatment Plant. Report availability will also be noted in the Public Information Office.

Element 17: Management Review

Created/Approved: PM/JB
Date issued: March 1, 2008
Date last reviewed: December 21, 2011
Date last revised: December 22, 2011

General

The City of Mankato will conduct a management review of its biosolids and BMP program on an annual basis. The purpose of this review will be to address the possible need for changes to the policy, the goals and objectives, the biosolids management program and other BMP elements based on internal BMP audit results, third party verification audit results, changing circumstances and the City of Mankato's commitment to continual improvement.

Procedures

1. The Utilities Superintendent will review BMP and related biosolids management activities on an annual basis. This review will be coordinated by the BMP Coordinator.
2. The review will be conducted by June 31st of each year and will cover activities conducted during the previous year.
3. The scope will include:

    Review monitoring data and other measurements that demonstrate the performance of the City of Mankato's biosolids program relative to established goals, objectives and legal requirements
    Review progress towards achieving biosolids goals and objectives
    Review internal audit results
    Review third party audit results
    Review the need for changes in exiting policy or the adoption of new policy to support the BMP and biosolids related activities

4. To facilitate management review, the BMP Coordinator will prepare a written report that addressees each of the above areas. The report will include recommendations for changes that should be considered by the Utilities Superintendent, if any.
5. The report and management review will be carried out in close coordination with the Biosolids Management Program Performance Report (Element 15) and the internal BMP audit (Element 16). To the extent practicable an effort will be made to develop a single report on an annual basis that addresses Elements 15, 16 and 17.
6. The BMP Coordinator will schedule a follow-up meeting with the Utilities Superintendent to discuss the report.

7. Any changes to policies, goals/objectives, plans, procedures, work practices and other BMP elements deemed necessary as part of the management review will be documented in writing by the BMP Coordinator.
8. The BMP Coordinator will develop a schedule and action plan to address recommendations from the management review.
9. The report, follow-up recommendations and associated schedules/action plans will be provided to the BMP committee. They will be made available in hard copy at the Wastewater Treatment Plant. Report availability will also be available at the Public Information Office.
10. The management will use the annual review to determine conclusions about BMP suitability, adequacy, and/or effectiveness.
11. After review, if management deem operational changes necessary, training will be provided to applicable employees in a timely manner.